Assessment of HPV Vaccination Status Among Adolescents in Omaha, Nebraska: A Roadmap for Informing Future Policy Decision Making and Health Education

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ABSTRACT

Background: Human Papilloma Virus (HPV) is the most commonly transmitted sexual transmitted disease with over 14 million infections in 2008. Despite availability and its preventative ability against cancer, vaccination against HPV remains low amongst all age groups from nine years onward. Rates are low both nationally (F=39.7%, M=21.6%) and within Nebraska (F=43.3%, M=23.8%). The goal is to identify the HPV vaccination coverage of 9-18 years old female and males at Creighton Children's Physician Clinic pre and post intervention. **Method**: After IRB approval both retrospective and prospective data on HPV vaccination was assessed from Aug 2015-April 2016, addressing demographics including insurance, zip code, race, and gender. **Results**: There were significantly higher vaccination coverage among females vs males 50.6% vs 39.1% (p<0.0001). Overall HPV vaccination rates were higher for Medicaid compared to private insurance 49.6% vs 39.2% (p<0.0001).
Conclusion: HPV Vaccination rate is higher than national average and higher for Females and Medicaid patients but Intervention had minimal increase. Pre screening the clinic visits for vaccines, addressing missed opportunities, cancer prevention message and team effort can sustain vaccine promotion.

BACKGROUND

- From 2006 – 2010, HPV infection was implicated in 91% of cervical cancer cases, 91% of anal cancer cases, and 72% of oropharynx cancers. A large majority were due strains HPV 16 and 18.
- Between 2008-2012, cervical cancer incidence in Douglas County, NE was 6.7 per 100,000 females and in Nebraska was 7.2 per 100,000.
- Most recently, the ACIP recommended immunizing all 11-12 year olds and those who have not been previously vaccinated through age 26 with the 3-dose Gardasil vaccines. The ACIP also indicates that the vaccine series may be started as young as nine years old.
- Currently, only Rhode Island, Virginia and Washington D.C. have laws that mandate HPV vaccination

RESULTS

Figure 1.

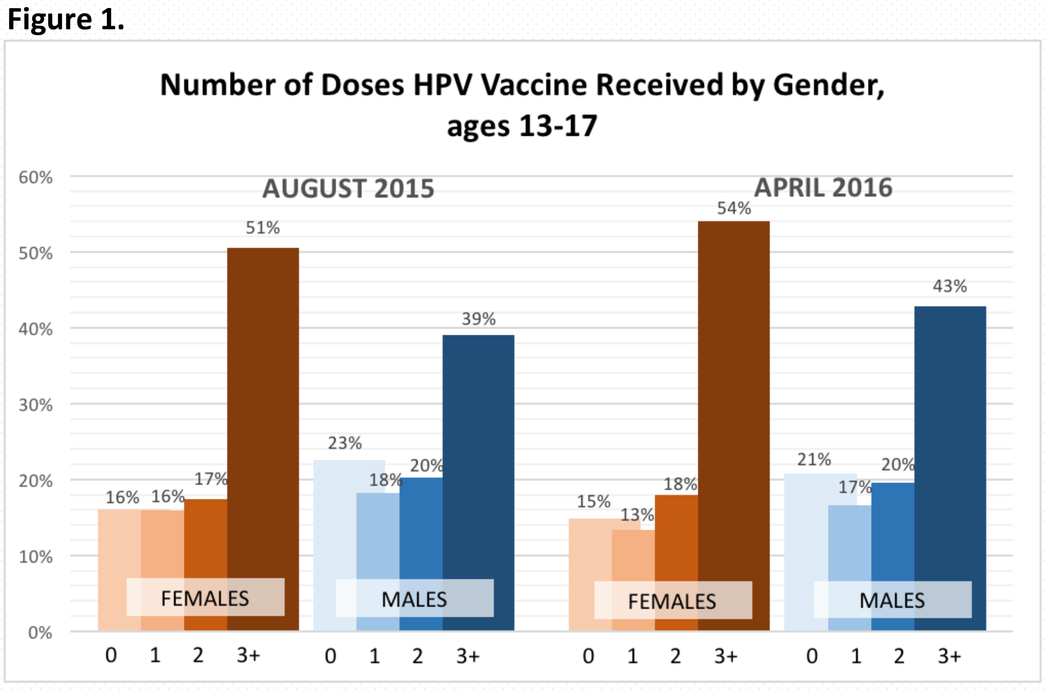

Figure 1. This set includes patients aged 13 through 17 years as of Aug. 28, 2015 and those aged 13.67 through 17.67 years as of Apr. 25, 2016.

In patients 9 through 12 years of age, coverage was much lower as of August 2015. In female patients (N=717), only 15.8% had received at least one dose and only 2.5% had received all three doses. In male patients (N=676), only 12.0% had received at least one dose and less than 1% had received all three doses. Follow up data collected in April 2016 showed similar coverage in this age range.

Figure 2.

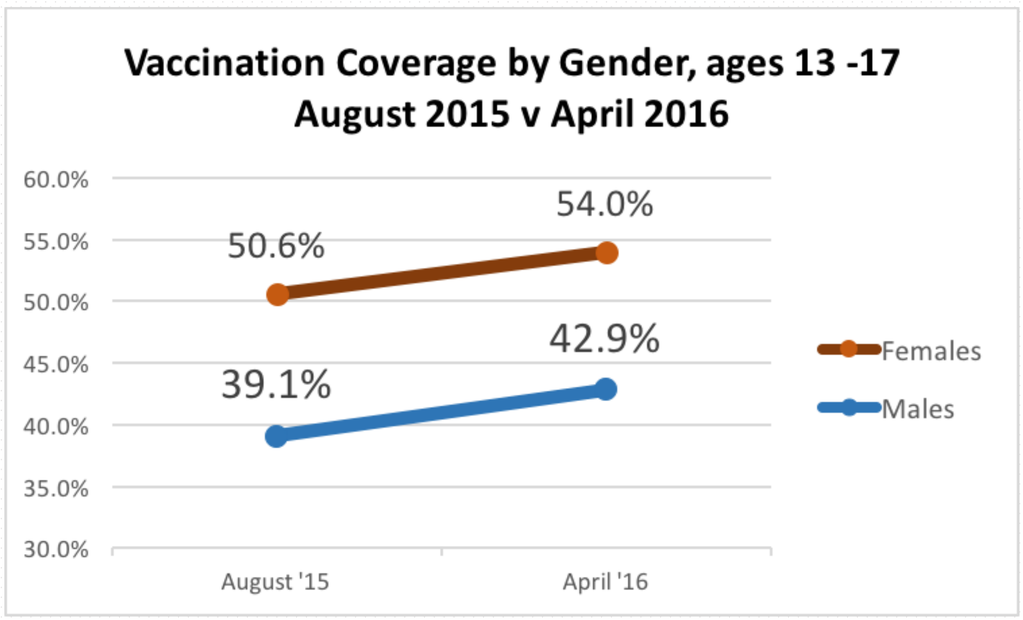

Figure 2. Vaccination coverage, defined as completing the HPV vaccination 3 dose series, is displayed by gender prior to and following intervention. Females showed improvement in vaccination coverage from baseline 50.6% (N=540) to 54% (N=541). Rates in Males also increased from 39.1% (N=622) to 42.9% (N=619). Analysis of baseline found that females were significantly (p<.0001) more likely (RR=1.23) than males to be fully vaccinated.

METHODS

- Following IRB approval, baseline vaccination was collected at Time Point 1, in August 2015 which included immunization status of male and female patients, aged 9-18 years old as well as race, insurance coverage, and zip code of these patients.
- Data was analyzed by HPV vaccine (0,1,2,3 doses) coverage
- Shortly thereafter, intervention was progressively, though non-specifically, implemented. Intervention included presentation of data to staff, team discussions, and allocation of images depicting HPV manifestations for use in patient rooms.
- In early March 2016, intervention was expanded by sending out HPV vaccination reminder mailings to the parents or guardians of all 9-12 year old patients who had visited the clinic since the start of 2011.
- Follow up data was collected at Time Point 2, in April 2016, to assess the relative effectiveness of these intervention programs in increasing vaccine coverage. Data was also analyzed demographically.

Vaccination Coverage by Insurance

Table 1. HPV vaccination coverage by type of Insurance in patients aged 13 through 17. Among patients aged 13 through 18, those on Medicaid (N=1049) were significantly (p<.0001) more likely (R=1.33) to be fully vaccinated than those not on Medicaid (N=530).

	INSURANCE	AUGUST 2015	APRIL 2016
FEMALES	MEDICAID	55.4%	58.0%
	NON-MEDICAID	43.6%	46.6%
	NO INSURANCE	32.1%	40.8%
MALES	MEDICAID	43.8%	47.7%
	NON-MEDICAID	34.8%	36.8%
	NO INSURANCE	20.5%	27.4%

Vaccination Coverage by Zip Code

Figure 3a.

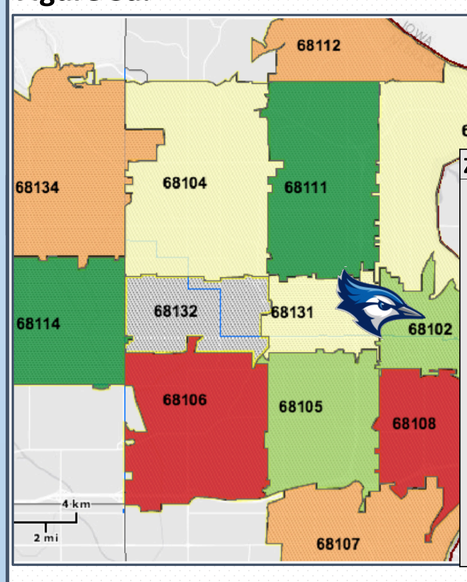

Figure 3b.

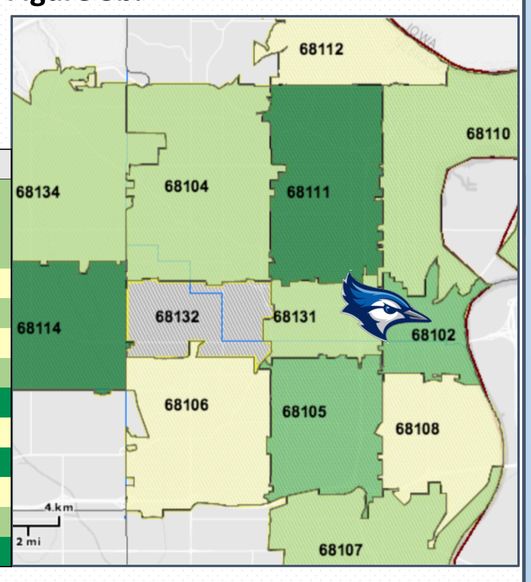

Table 2.

Zip Code	August	April
68102	50.0%	50.0%
68104	45.8%	47.2%
68105	49.5%	49.4%
68106	35.7%	44.4%
68107	40.7%	47.6%
68108	39.5%	45.1%
68110	47.5%	48.1%
68111	51.7%	56.5%
68112	43.3%	44.4%
68114	52.6%	58.8%
68131	47.6%	45.7%
68134	43.5%	47.7%
68147	50.0%	54.5%

Figure 3a depicts HPV vaccine coverage from data retrieved in August 2015. The highest coverages by percent were in zip codes 68114 and 68111. The clinic is represented by the bluejay on the map. **Figure 3b** depicts HPV vaccine coverage from data retrieved in April 2016. The highest coverages by percent were in zip codes 68111, 68114, and 68147. **Table 2** displays the HPV vaccine coverage in each zip code, at each time point. Gender data is combined in this analysis.

DISCUSSION

- HPV vaccine prevents HPV associated oropharyngeal and genitourinary cancers.
- Vaccination rates are higher than national average. Females and Medicaid patients were more likely to be vaccinated than males and non –Medicaid patients.
- There was a large discrepancy between patients 12 and under compared to 13 and over. The CDC guidelines suggests that vaccinations can be started at 9 and 10 years old Controversy regarding discussing sexual practices may also play a role, amongst other factors. Cancer prevention message can be promoted.
- Overall rates improved among both genders for the 13 through 17 age range.
- There was improvement in many zip codes around Omaha, especially 68107 and 68108. Future study should examine underlying socioeconomic differences between zip codes.
- Pre screening the visits and team effort may promote sustained increase in vaccination.

CONCLUSION

- There was slight improvement with intervention. More tightly controlled study is needed to determine the effectiveness of intervention as a whole and of specific measures.
- Demographic data provided preliminary insight into existing discrepancies.
- Future efforts should be more active and include healthcare staff more directly. Possible ideas for expansion include EMR reminders to reduce missed opportunities and pre-screening patients' vaccination records prior to appointments.
- HPV Cancer prevention message can overcome controversies.

Acknowledgements

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